

## A Note on the Composition of Verbal Response Forms

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This note is about composition—the process by which fragments of verbal behavior are combined in novel verbal forms. The note begins by discussing recent studies of morpheme combining behavior. It then outlines the concept of composition and shows how the concept implies a new direction for this area of research.

There have been many studies of what Segal (1975) called "morpheme combining behavior"<sup>1</sup> (e.g., Frisch & Schumaker, 1974; Garcia, Guess, & Byrnes, 1973; Guess, Sailor, Rutherford, & Baer, 1968; Lutzker & Sherman, 1974; Smeets & Striefel, 1976). Each study began with one or more experimenter-defined classes containing response forms describable linguistically as rule-governed combinations of morphemes. An example is the class of plural nouns ("pens," "keys," "balls," "nails," etc.). Subjects were those who initially did not produce response forms of the class or classes of interest. They were trained to produce several different forms in succession through echoic prompting and differential reinforcement. Subsequently, they produced other forms that had not been prompted or reinforced on an earlier occasions, but were related functionally to the forms which did have this history.

Lee (1981) criticized the terminology currently associated with studies of morpheme combining. This terminology speaks of subjects acquiring and using language and rules of language, implying a formulation of morpheme combining incompatible with radical behaviorism's rejection of mentalism. Lee (1981) recommended that investigators abandon both this terminology and the formulations associated with it. This recommendation might seem to leave a terminological and

conceptual vacuum. But that is not the case, since Skinner's *Verbal Behavior* (1957) offers an alternative formulation of morpheme combining and provides, ready made, an alternative terminology. The present note outlines this alternative and shows how it implies a new direction for the morpheme combining research.

Skinner (1957) interpreted novel verbal behavior forms as reflecting the compounding of behavioral units calls "fragments" (e.g., p. 294, p. 309)<sup>2</sup> or "units" (e.g., p. 116). Fragments are unitary response forms under the control of discriminative stimuli (p. 119). They may, though not need, correspond to traditional linguistic units such as morphemes, words, and phrases (p. 335). Fragments range in size from minimal forms not subject to fracturing ("s," "ing," etc.), through skeletal frames ("the... and the..." etc.), to longer unitary forms (e.g., p. 116, pp. 335-336). Skinner (p. 123, p. 346) used the term "composition" to refer to the process of combining fragments into larger segments of verbal behavior. He indicated (pp. 119-121) that a composed response form, resulting from this process always contains two or more fragments, with each fragment depending for its discriminative control on some functionally separate part of the situation.

The concept of compositions requires an account of how fragments are acquired. Skinner (pp. 119-121) indicated three possibilities. First, some fragments may be acquired through direct training as separate units. Second, some may be acquired indirectly as a by-product of the acquisition of two or more longer *response forms* that contain a common element and that are reinforced on occasions that contain a common property. For example the forms "pen," "keys," and

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<sup>1</sup> We, as observers, can *describe* the behavior of interest as morpheme combining behavior without implying that subjects necessarily combine behavioral entities corresponding to morphemes.

<sup>2</sup> Page numbers are for *Verbal Behavior* (1957).

"nails" have in common the element "-s" and the occasions on which they are reinforced have in common the property of plurality. If this property gains discriminative control of the common "-s," then that element becomes a fragment, available for combination with other fragments on novel occasions. The third possibility is that a fragment may be acquired indirectly as a by-product of the acquisition of two or more *skeletal frames* that contain a common element. Skinner (pp. 119-120) gave an example the possible emergence of "I" as a fragment collateral to the earlier emergence of "I have. . ." and "I want. . ." as skeletal frames.

The emergence of fragments collateral to the acquisition of two or more response forms has been investigated in extensive studies of morpheme combining. Emergence collateral to the acquisition of two or more skeletal frames remains to be investigated. Investigating it would require that bits of syntax be added to an initial, syntactically-primitive, repertoire. Skinner's (pp. 119-120) example implies an initial repertoire comprising such frames as "want (tact)," "see (tact)," and "touch (tact)." The example also implies that at some point the more standard frames "I want (tact)," and "I have (tact)" are acquired. Verbal forms such as "I see book" and "I touch pencil" then appear on the appropriate occasions, indicating the "I" has emerged as a fragment available for combination with other parts of the repertoire. Studying the possibility experimentally would require initially establishing the primitive repertoire and subsequently adding "I" to each frame in succession, with probes interspersed to detect the predicted composition. The same technique could readily be used with other cases; for instance, to investigate the emergence of "-s" in an initial repertoire comprising the primitive frames "(tact) behind (tact)," "(tact) front of (tact)," "(tact) left of (tact)," and "(tact) right of (tact)."

Extending morpheme combining research in the proposed direction is likely to be worthwhile. For one thing, it might encourage investigators to adopt Skinner's (1957) conceptual analysis and simultaneously to abandon the terminological and conceptual

practices criticized elsewhere (Lee, 1981). Further, it might counter the objection (Jones, in Salzinger, 1967) that an operant analysis of verbal development requires the training of too many response classes, by showing empirically that there is no such requirement. Finally, the proposed extensions might contribute to discussions about the nature of units of operant behavior. In *Science and Human Behavior*, Skinner (1953, pp. 94-95) argued that an entity called an "element" or an "atom" is this unit. A reading of Skinner's argument suggests that the atoms of *Science and Human Behavior* are the fragments of *Verbal Behavior*. Elsewhere, Skinner (in Evans, 1968, pp. 20-21) commented that behavior is fluid, that it is not composed of responses packed together. He said we need a formulation that acknowledges this fluidity. The concept of a fragment, together with the process of composition, seems to be the kind of formulation Skinner had in mind.

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